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REMARKS:

Claims 1 to 8, 10, and 12 to 26 are in the application, with claims 1 to 8 and 10 having been amended. Claims 1, 4, 12, 21, 25 and 26 are the independent claims. Reconsideration and further examination are respectfully requested.

Claim Rejections

In the last Office Action in this case, all pending claims were rejected under 35 U.S.C. § 103(a) over U.S. Patent No. 6,026,448 (Goldrian), U.S. Patent No. 6,499,028 (Brock), and U.S. Patent No. 6,658,469 (Massa).

Discussion

Independent claim 1 has been amended to recite the following:

1. A method of sending data between a client and a server using at least one of plural data buffers of different sizes in said client and at least one of plural data buffers of different sizes in said server, comprising steps of:  
selecting a send data buffer and a receive data buffer from among the plural data buffers in said client and the plural data buffers in said server, said send data buffer and said receive data buffer matched to a size of data blocks to be transferred into or out of those data buffers; and  
transferring said data.

The applied art is not seen by Applicant to disclose or to suggest the features of this claim, at least with respect to "selecting a send data buffer and a receive data buffer from among the plural data buffers in said client and the plural data buffers in said server, said send data buffer and

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said receive data buffer matched to a size of data blocks to be transferred into or out of those data buffers." The claim has been amended to more definitely recite this feature.

The Office Action cited Massa with respect to data buffers matched to sizes of data blocks. Massa at col. 12, lines 33 to 35, states that "the switch 120 determines if the size of the receive buffers 134 is large enough to justify the cost of RDMA." Checking to see if a receive buffer is large enough is different from selecting send and receive data buffers that are matched to a size of data blocks to be transferred, as recited by claim 1.

More generally, Massa teaches "an adaptive protocol that adapts the way data is transferred by observing when an application that is receiving data posts a receive buffer and detects the receive buffer's size." Massa further teaches that, "[b]ased upon the application's or device's behavior, the switch transfers the data in a mode that is best suited for the application." Massa, Abstract. Thus, Massa appears to use the receive buffer's size to determine how to adapt data transfer, for example by deciding to use or not to use RDMA. See Massa, col. 12, lines 33 to 35. This operation is different from, for example, performing adaptation by selecting send and receive data buffers that are matched to a size of data blocks.

Furthermore, Applicant still does not see Massa to teach claim 1's feature of "at least one of plural data buffers of different sizes in said client and at least one of plural data buffers of different sizes in said server."

The first paragraph on page 4 of the last Office Action acknowledged that neither Goldrian nor Brock taught a feature along these lines. Massa was cited to remedy the deficiency of Goldrian's and Brock's teachings.

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The Office Action on page 4 stated that Massa teaches the following: "switch 120 determines if the size of the receive buffers 134 in the client is large enough, and if it is then switch 126 transfers an amount of data equal to the size of the receive buffers." To Applicant, this appears to imply that the data is matched to the receive buffer. Applicant respectfully submits that this is different from data buffers that are matched to the size of data blocks to be transferred. In fact, one advantage of having client and server data buffers matched to the size of data blocks to be transferred is that the data blocks do not need to be re-sized for efficient transfer between the buffers.

Finally, even if these features are equivalent, Applicant does not see anything in these teachings that is equivalent to a "send data buffer ... matched to a size of data blocks to be transferred ... out of those data buffers," as is also recited by claim 1. While Massa certainly does teach the existence of send buffers, Applicant sees no mention of having these buffers matched to a size of data blocks to be transferred.

In view of the foregoing, reconsideration and withdrawal are respectfully requested of the rejection of claim 1 and its dependent claims.

Claims 4 to 8 and 10: Claim 4 is reproduced here as amended:

4. A system including  
a client and server;  
a NUMA communication link coupled to said client and server; and  
plural data buffers of different sizes in said client and plural data buffers of different sizes in said server for data transfers between said client and said server using said NUMA communication link;  
wherein when data is transferred between said client and said server using said data buffers, a send data buffer and a receive data buffer are selected from among the plural data buffers in said client and the plural data buffers in said server, said send data buffer and said receive data buffer

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matched to a size of data blocks to be transferred into or out of those data buffers.

The applied art is not seen to disclose or to suggest the foregoing features of claim 4, at least with respect to selecting a send data buffer and a receive data buffer that are matched to a size of data blocks to be transferred into or out of those data buffers. Substantially as discussed above with respect to claim 1, the applied art is not seen to teach this feature. Therefore, reconsideration and withdrawal are respectfully requested of the rejection of claim 4 and its dependent claims.

Claims 12 to 20: Claim 12 is reproduced here as amended:

12. A system including  
a server, said server having a memory including a client communication region and a data transfer region, said data transfer region having plural data buffers of different sizes for data transfers to and from a client, at least some of said data buffers matched to different sizes of data blocks to be transferred into or out of those data buffers and matched to different sizes of data buffers in said client that are also matched to said different sizes of said data blocks to be transferred; and  
a remote DMA communication link coupled to said data transfer region;  
wherein said client communication region includes information regarding a data transfer into or out of said data transfer region; and  
wherein one or more of said server data buffers is selected for a data transfer responsive to a size of data blocks for said data transfer.

The applied art is not seen to disclose or to suggest the foregoing features of claim 12, at least with respect to "at least some of said data buffers matched to different sizes of data blocks to be transferred into or out of those data buffers and matched to different sizes of data buffers in said client that are also matched to said different sizes of said data blocks to be transferred." While worded differently because this claim recites only the server side, this claim also necessitates that at

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least some of the data buffers both in the client and in the server are matched to sizes of data blocks to be transferred into or out of those data buffers. Substantially as discussed above with respect to claim 1, the applied art is not seen to teach this feature. Therefore, reconsideration and withdrawal are respectfully requested of the rejection of claim 12 and its dependent claims.

Claims 21 to 24: Claim 21 is reproduced here as amended:

21. A method including  
communicating file system requests and responses between a client and a file server;  
sending data between said client and said file server using a memory access operation involving at least one of plural data buffers of different sizes both in said client and in said file server, at least some of said data buffers both in said client and in said file server matched to sizes of data blocks to be transferred into or out of said data buffers, wherein selection of one or more of said data buffers is responsive to information in said requests or said responses and is responsive to a size of data blocks for said memory access operation.

The applied art is not seen to disclose or to suggest the foregoing features of claim 21, at least with respect to "at least some of said data buffers both in said client and in said file server matched to sizes of data blocks to be transferred into or out of said data buffers." Substantially as discussed above with respect to claim 1, the applied art is not seen to teach this feature. Therefore, reconsideration and withdrawal are respectfully requested of the rejection of claim 21 and its dependent claims.

Claim 25: Claim 25 is reproduced here as amended:

25. A method including  
communicating file system requests and responses between a client and a database server;  
sending data between said client and said database server using a memory access operation involving at least one of plural data buffers of

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different sizes both in said client and in said database server, at least some of said data buffers both in said client and in said database server matched to sizes of data blocks to be transferred into or out of said data buffers, wherein selection of one or more of said data buffers is responsive to information in said requests or said responses and is responsive to a size of data blocks for said memory access operation.

The applied art is not seen to disclose or to suggest the foregoing features of claim 25, at least with respect to "at least some of said data buffers both in said client and in said database server matched to sizes of data blocks to be transferred into or out of said data buffers." Substantially as discussed above with respect to claim 1, the applied art is not seen to teach this feature. Therefore, reconsideration and withdrawal are respectfully requested of the rejection of claim 25.

Claim 26: Claim 26 is reproduced here as amended:

26. A method including  
communicating requests and responses between a client and a server;  
sending data between said client and said server using a memory  
access operation involving at least one of plural data buffers of different sizes  
both in said client and in said server, at least some of said data buffers both in  
said client and in said server matched to sizes of data blocks to be transferred  
into or out of said data buffers, wherein selection of one or more of said data  
buffers is responsive to information in said requests or said responses and is  
responsive to a size of data blocks for said memory access operation.

The applied art is not seen to disclose or to suggest the foregoing features of claim 26 at least with respect to "at least some of said data buffers both in said client and in said server matched to sizes of data blocks to be transferred into or out of said data buffers." Substantially as discussed above with respect to claim 1, the applied art is not seen to teach this feature. Therefore, reconsideration and withdrawal are respectfully requested of the rejection of claim 26.

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Closing

In view of the foregoing amendments and remarks, the entire application is believed to be in condition for allowance, and such action is respectfully requested at the Examiner's earliest convenience.

Applicant's undersigned attorney can be reached at (614) 205-3241. All correspondence should continue to be directed to the address indicated below.

Respectfully submitted,



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